

**THE BRITISH ASSOCIATION OF
UROLOGICAL SURGEONS
Section of Oncology**

Analyses of Radical Cystectomies performed between

January 1st and December 31st 2018

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AUDIT RESULTS SUMMARY – Cystectomy dataset

All the data presented here are a summary of the data extracted from the web-based database on 17th September 2019 and relate to operations performed during the whole of 2018. Once extracted the data was transferred to an AccessTM database for validation before being imported into TableauTM for generation of the analyses. The validation mainly comprised checks for duplicate and / or empty entries and invalid / inappropriate dates. 58 procedures recorded as abandoned were removed from the dataset before analysis to prevent statistical skewing.

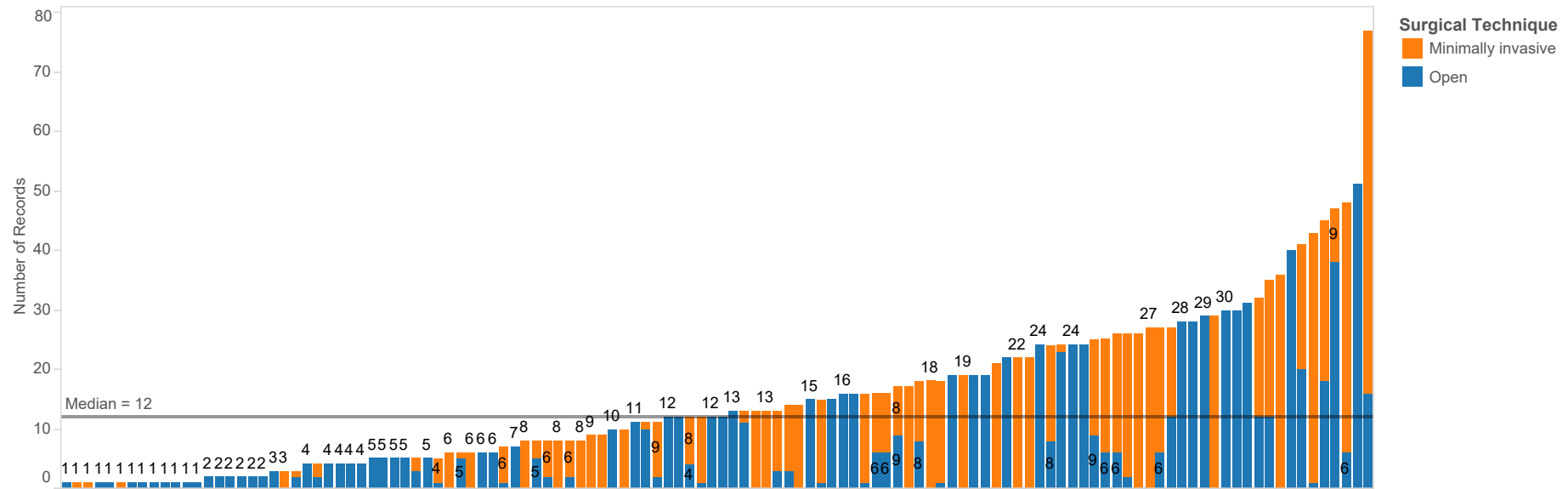
The data collection period was from 1 January 2018 to 31 December 2018.

- 1,824 cases were submitted in total, of which 1,630 were from England. The 1,824 cases came from 120 consultants at 61 sites and include 34 private patients from 14 consultants.
- Median number of cases per consultant: 12 (range 1 - 77)
- Median number of cases per centre: 27 (range 1 - 80)
- The overall transfusion rate was 9.9% By technique, the transfusion rates were: open 16.7% and minimally invasive 3.2%.
- The overall known Clavien Dindo Grade III plus post-operative complication rate was 6.5%. (Open 7.5%, minimally invasive 6.0%)
- Hospital Episode Statistics (HES) for 2018 indicate that there were 1,916 cystectomies undertaken so we collected data on 85% of the cases undertaken in England in 2018.

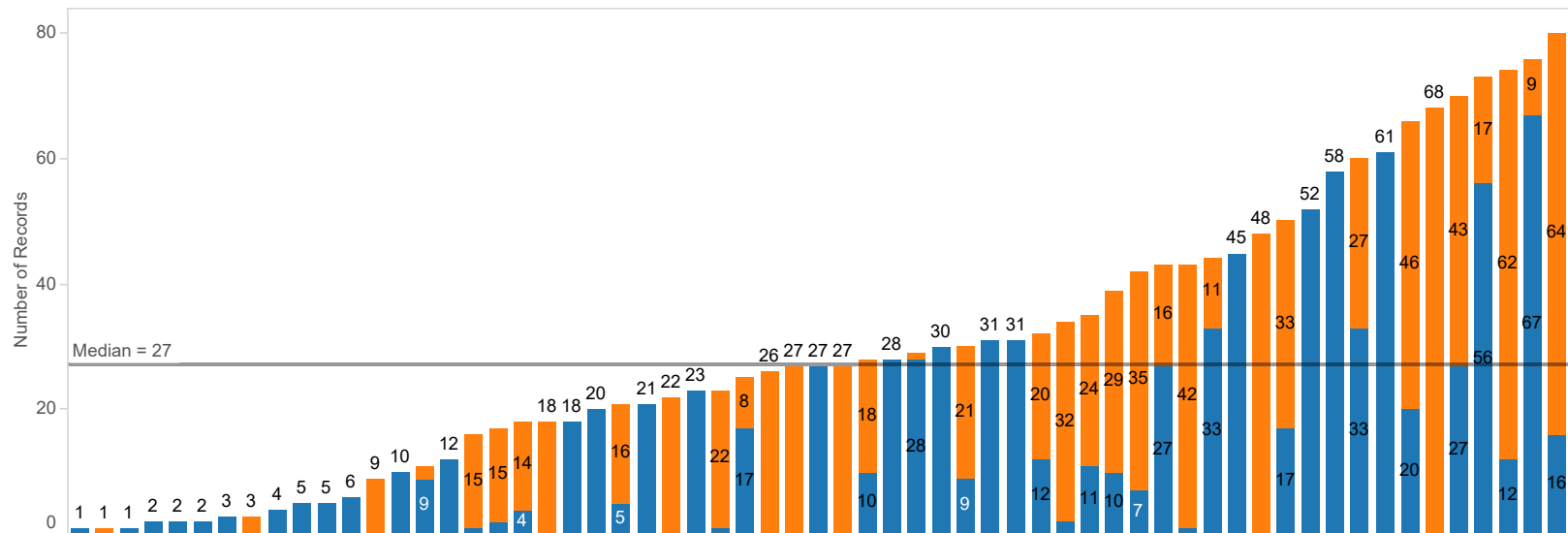
Total returns for Radical Cystectomy procedures performed between 01/01/2018 and 31/12/2018

1,824 cases from 120 consultants at 61 sites including 34 private cases from 14 consultants

Total by Consultant



Total by Centre



Totals by Technique

Gender	Open		Surgical Technique Minimally invasive		Grand Total	
	Number of Records	% of Total Number of Records along Table (Down)	Number of Records	% of Total Number of Records along Table (Down)	Number of Records	% of Total Number of Records along Table (Down)
Male	692	74.0%	689	77.3%	1,381	75.6%
Female	243	26.0%	202	22.7%	445	24.4%
Grand Total	935	100.0%	891	100.0%	1,826	100.0%

Technique by Age

Surgical Technique	Number of Records	Median Age	Min. Age	Max. Age
Open	932.0	71.0	0.0	100.0
Minimally invasive	890.0	70.0	0.0	100.0

Indication

Indication For Cystectomy	Number ..	% of Tot..
Muscle invasive TCC	795	43.5%
Primary NMIBC	216	11.8%
NMIBC refractory to intravesical treatment	266	14.6%
Primary adenocarcinoma	25	1.4%
Primary CIS	43	2.4%
Salvage after radiotherapy	64	3.5%
Sarcoma	10	0.5%
Squamous cell carcinoma	64	3.5%
Benign disease	28	1.5%
Gynaecological cancer	15	0.8%
Secondary adenocarcinoma	8	0.4%
Other	162	8.9%
Not recorded	130	7.1%
Grand Total	1,826	100.0%

Pre-op Imaging

Pre Operative Imaging (group)	Number of Records	% of Total Number of Recor..
CT	862	47.2%
CT +/- Bone scan, USS, MRI Others	588	32.2%
MRI	10	0.5%
Bone scan	2	0.1%
MRI + others	10	0.5%
USS +/- Other	4	0.2%
PET +/- others	4	0.2%
None	90	4.9%
Not recorded	256	14.0%
Grand Total	1,826	100.0%

Pre-operative Serum Egfr

ops EgfrNormal	Serum Egfr	Number of Records	% of Total Number of Recor..
Yes (>60)	not recorded / applicable	1,114	61.0%
No	20 - 39	72	3.9%
	40 - 60	264	14.5%
	<20	7	0.4%
	not recorded / applicable	14	0.8%
Not recorded	not recorded / applicable	355	19.4%
Grand Total		1,826	100.0%

Pre-op Serum Creatinine

Pre-op Serum Creatinine	Number of Records	% of Total Number of Recor..
0 - 120	1,251	68.5%
121 - 200	194	10.6%
> 200	19	1.0%
Not recorded	362	19.8%
Grand Total	1,826	100.0%

Status Upper Tracts

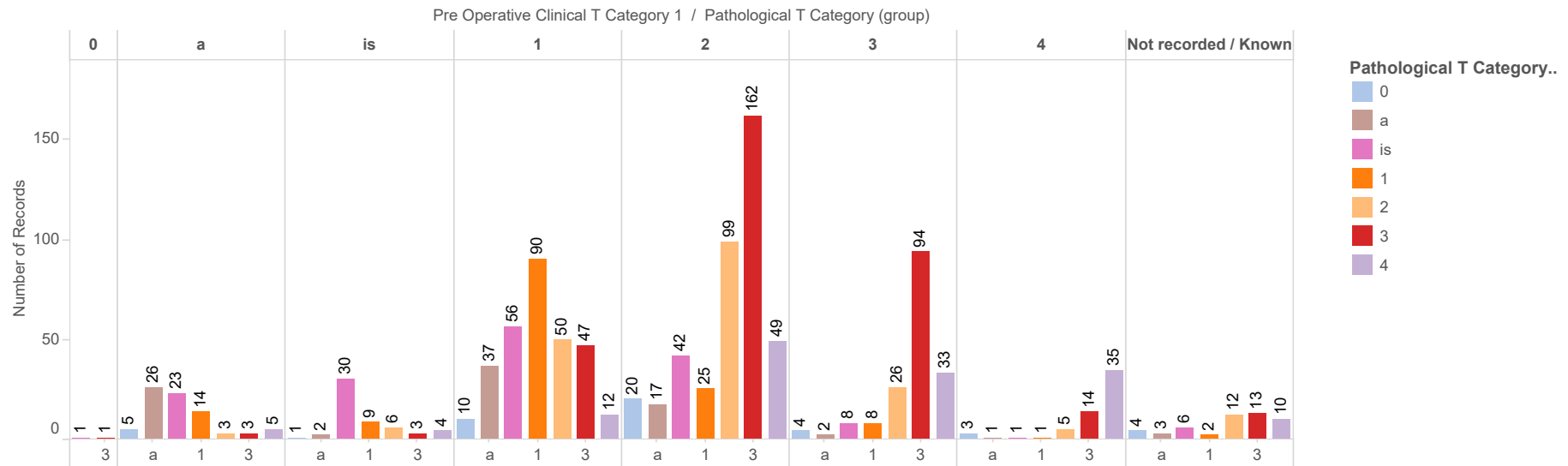
ops StatusUpperTracts	Number of Records	% of Total Number of Recor..
Normal	997	54.6%
Unilateral hydronephrosis	209	11.4%
Bilateral hydronephrosis	84	4.6%
TCC	22	1.2%
RCC	4	0.2%
Single functioning kidney	26	1.4%
Other	29	1.6%
Not recorded	455	24.9%
Grand Total	1,826	100.0%

Pre-operative CT category

Pre Operative Clinical T Category (group)	% of Total Number of Records	Number of Records
0	1.0%	18
is	4.5%	82
a	6.4%	116
1	21.9%	399
2	26.4%	482
2a	3.1%	57
2b	1.9%	35
3	6.3%	115
3a	2.4%	44
3b	3.2%	58
4a	3.1%	56
4b	1.2%	21
Not recorded / Known	18.8%	343

Number of Records

Comparison clinical T category with pathological T category



Operating Surgeon

Grade Of Mai..	Supervised Training ..	Number ..	% of Tot..
Consultant	Yes	17	0.9%
	No	263	14.4%
	Null	1,387	76.0%
	Total	1,667	91.3%
SpR	Yes	70	3.8%
	No	8	0.4%
	Total	78	4.3%
Other	Yes	2	0.1%
	No	11	0.6%
	Total	13	0.7%
Not recorded	Null	68	3.7%
	Total	68	3.7%
Grand Total		1,826	100.0%

Diversion Procedure

Diversion Procedure	Open		Surgical Technique		Grand Total	
	Number of Records	% of Total Number of Records along Table (Down)	Number of Records	% of Total Number of Records along Table (Down)	Number of Records	% of Total Number of Records along Table (Down)
Continent cutaneous	8	0.9%	7	0.8%	15	0.8%
Ileal conduit	737	78.8%	704	79.0%	1,441	78.9%
Orthotopic	31	3.3%	43	4.8%	74	4.1%
Other	16	1.7%	14	1.6%	30	1.6%
Not recorded	143	15.3%	123	13.8%	266	14.6%
Grand Total	935	100.0%	891	100.0%	1,826	100.0%

Joint Operating Cases

Grade Of Mai..	Joint Operating C..	Number ..	% of Tot..
Consultant	Yes	509	27.9%
	No	1,158	63.4%
	Total	1,667	91.3%
SpR	Yes	2	0.1%
	No	76	4.2%
	Total	78	4.3%
Other	No	13	0.7%
	Total	13	0.7%
Not recorded	Yes	5	0.3%
	No	63	3.5%
	Total	68	3.7%
Grand Total		1,826	100.0%

Time from Diagnosis to Cystectomy

Time Diagnosis to cystectomy (..	Number of Records	% of Total Number of Recor..
0-30days	64	5.0%
31 to 60	204	15.8%
61-90	194	15.1%
91-180	423	32.8%
181-360	166	12.9%
>360	238	18.5%
Grand Total	1,289	100.0%

CPEX Testing

Cpex Testing	Number of Records	% of Total Number of Recor..
Yes	583	31.9%
No	932	51.0%
Not recorded	311	17.0%
Grand Total	1,826	100.0%

Total Pelvic exenteration

Total Pelvic Exenteration	Surgical Technique					
	Open		Minimally invasive		Grand Total	
	Number of Records	% of Total Number of Records ..	Number of Records	% of Total Number of Records ..	Number of Records	% of Total Number of Records ..
Yes	65	7.0%	19	2.1%	84	4.6%
No	572	61.2%	685	76.9%	1,257	68.8%
Not recorded	298	31.9%	187	21.0%	485	26.6%
Grand Total	935	100.0%	891	100.0%	1,826	100.0%

N.B. Specific question added to dataset late 2017 and combined with free text data from 'other concomitant procedures' field

Synchronous Urethrectomy

Surgical Technique	Combined Synchronous Urethrectomy							
	Yes		No		Null		Grand Total	
	Number of Records	% of Total Number o..	Number of Records	% of Total Number o..	Number of Records	% of Total Number o..	Number of Records	% of Total Number o..
Open	128	13.7%	685	73.3%	122	13.0%	935	100.0%
Minimally invasive	87	9.8%	671	75.3%	133	14.9%	891	100.0%
Grand Total	215	11.8%	1,356	74.3%	255	14.0%	1,826	100.0%

Synchronous Nephroureterectomy

Surgical Technique	Combined Synchronous Nephroureterectomy							
	Yes		No		Null		Grand Total	
	Number of Records	% of Total Number of Records ..	Number of Records	% of Total Number of Records ..	Number of Records	% of Total Number of Records ..	Number of Records	% of Total Number of Records ..
Open	26	2.8%	779	83.3%	130	13.9%	935	100.0%
Minimally invasive	24	2.7%	732	82.2%	135	15.2%	891	100.0%
Grand Total	50	2.7%	1,511	82.7%	265	14.5%	1,826	100.0%

Other Concomitant procedures

Surgical Technique	Concomitant Procedures Specify (group)					
	Other Concomitant procedure		None/ Not recorded		Grand Total	
	Number of Records	% of Total Number ..	Number of Records	% of Total Number ..	Number of Records	% of Total Number ..
Open	140	15.0%	795	85.0%	935	100.0%
Minimally invasive	133	14.9%	758	85.1%	891	100.0%
Grand Total	273	15.0%	1,553	85.0%	1,826	100.0%

N.B. Text field in dataset from start of data collection - includes all other procedures including Total Pelvic exenterations.

Duration of Operation

Duration Of Operation (group)

Surgical Technique	<3 hours		3-5 hours		>5 hours		Not recorded		Grand Total	
	Number of Records	% of Total Number of Records ..	Number of Records	% of Total Number of Records ..	Number of Records	% of Total Number of Records ..	Number of Records	% of Total Number of Records ..	Number of Records	% of Total Number of Records ..
Open	74	7.9%	402	43.0%	293	31.3%	166	17.8%	935	100.0%
Minimally invasive	55	6.2%	300	33.7%	376	42.2%	160	18.0%	891	100.0%
Grand Total	129	7.1%	702	38.4%	669	36.6%	326	17.9%	1,826	100.0%

Blood Loss

Measured Blood Loss

Surgical Technique	<300 ml		300-500 ml		>500-1000 ml		>1000-2000 ml		>2000 ml		Not recorded		Grand Total	
	Number of Records	% of Total Number of Records ..	Number of Records	% of Total Number of Records ..	Number of Records	% of Total Number of Records ..	Number of Records	% of Total Number of Records ..	Number of Records	% of Total Number of Records ..	Number of Records	% of Total Number of Records ..	Number of Records	% of Total Number of Records ..
Open	157	16.8%	263	28.1%	225	24.1%	86	9.2%	25	2.7%	179	19.1%	935	100.0%
Minimally in..	418	46.9%	224	25.1%	93	10.4%	9	1.0%	1	0.1%	146	16.4%	891	100.0%
Grand Total	575	31.5%	487	26.7%	318	17.4%	95	5.2%	26	1.4%	325	17.8%	1,826	100.0%

Transfusions

Number Of Units Of Blood Transfused During This Surgical Ad

Surgical Technique	Nil		Minor (<2 units)		Moderate (3-6 units)		Major (>6 units)		Not recorded		Grand Total	
	Number of Records	% of Total Number..	Number of Records	% of Total Number..	Number of Records	% of Total Number ..	Number of Records	% of Total Number ..	Number of Records	% of Total Number ..	Number of Records	% of Total Number ..
Open	692	74.0%	88	9.4%	46	4.9%	6	0.6%	103	11.0%	935	100.0%
Minimally in..	818	91.8%	23	2.6%	3	0.3%	1	0.1%	46	5.2%	891	100.0%
Grand Total	1,510	82.7%	111	6.1%	49	2.7%	7	0.4%	149	8.2%	1,826	100.0%

Known Transfusion Rate

Transfusion

Surgical Technique	Yes		No	
	Number of Records	% of Total Number of Records ..	Number of Records	% of Total Number of Records ..
Open	140	16.8%	692	83.2%
Minimally invasive	27	3.2%	818	96.8%
Grand Total	167	10.0%	1,510	90.0%

Intraoperative Complications by Technique

Intra Operative Complications (group)	Surgical Technique					
	Open		Minimally invasive		Grand Total	
	Number of Records	% of Total Number..	Number of Records	% of Total Number..	Number of Records	% of Total Number..
None	716	76.6%	705	79.1%	1,421	77.8%
Adhesions	21	2.2%	22	2.5%	43	2.4%
Difficult dissection	27	2.9%	20	2.2%	47	2.6%
Haemorrhage / Bleeding	25	2.7%	7	0.8%	32	1.8%
Nerve injury	2	0.2%			2	0.1%
Rectal Injury	8	0.9%	1	0.1%	9	0.5%
Robotic device failure			1	0.1%	1	0.1%
Small bowel injury	2	0.2%	3	0.3%	5	0.3%
Not recorded	134	14.3%	132	14.8%	266	14.6%
Grand Total	935	100.0%	891	100.0%	1,826	100.0%

Postoperative Complications by Technique

Post Operative Complications (group) 1	Surgical Technique					
	Open		Minimally invasive		Grand Total	
	Number of Records	% of Total Number of Records ..	Number of Records	% of Total Number of Records ..	Number of Records	% of Total Number of Records ..
No Complications	577	61.7%	563	63.2%	1,140	62.4%
Anastomotic leak	6	0.6%	2	0.2%	8	0.4%
Bleeding/Haemorrhage	4	0.4%	6	0.7%	10	0.5%
Bowel obstruction	9	1.0%	7	0.8%	16	0.9%
Chest Infection +/- Others	41	4.4%	24	2.7%	65	3.6%
Intra-abdominal infection +/- others	25	2.7%	19	2.1%	44	2.4%
Lymphocele	4	0.4%	2	0.2%	6	0.3%
MI	6	0.6%	2	0.2%	8	0.4%
Wound infection / dehiscence	42	4.5%	15	1.7%	57	3.1%
PE / DVT	3	0.3%	2	0.2%	5	0.3%
Prolonged ileus +/- others	71	7.6%	72	8.1%	143	7.8%
Urine leak	14	1.5%	7	0.8%	21	1.2%
Not recorded	133	14.2%	170	19.1%	303	16.6%
Grand Total	935	100.0%	891	100.0%	1,826	100.0%

Post-operative complication rate

Post Operative Complications (group)

Surgical Technique	complication		None		Grand Total	
	Number of Records	% of Total Number of Records ..	Number of Records	% of Total Number of Records ..	Number of Records	% of Total Number of Records ..
Open	225	28.1%	577	71.9%	802	100.0%
Minimally invasive	158	21.9%	563	78.1%	721	100.0%
Grand Total	383	25.1%	1,140	74.9%	1,523	100.0%

Clavien Dindo Grade of Post operative complications

Clavien Dindo Grade Of Complications

Surgical Technique	Grade I		Grade II		Grade IIIa		Grade IIIb		Grade IVa		Grade IVb		Grade V		Grand Total	
	Number of Records	% of Total Number of Records a..	Number of Records	% of Total Number of Records ..	Number of Records	% of Total Number of Records a..	Number of Records	% of Total Number of Records ..	Number of Records	% of Total Number of Records a..	Number of Records	% of Total Number of Records ..	Number of Records	% of Total Number of Records a..	Number of Records	% of Total Number of Records ..
Open	42	19.3%	116	53.2%	20	9.2%	22	10.1%	6	2.8%	1	0.5%	11	5.0%	218	100.0%
Minimally invasive	31	19.7%	84	53.5%	18	11.5%	20	12.7%	3	1.9%			1	0.6%	157	100.0%
Grand Total	73	19.5%	200	53.3%	38	10.1%	42	11.2%	9	2.4%	1	0.3%	12	3.2%	375	100.0%

Known Post-operative Clavien Dindo Grade III plus complication rate

Surgical Technique

Clavien Dindo Grade Of Complications (group)	Open		Minimally invasive		Grand Total	
	Number of Records	% of Total Number of Records ..	Number of Records	% of Total Number of Records ..	Number of Records	% of Total Number of Records ..
Grade I & II	158	19.7%	115	16.0%	273	17.9%
Grade III plus	60	7.5%	43	6.0%	103	6.8%
No Post-op Complication	584	72.8%	563	78.1%	1,147	75.3%
Grand Total	802	100.0%	721	100.0%	1,523	100.0%

Total by LOS

Surgical Technique	Number of Records	Median Length Of Stay	Min. Length Of Stay	Max. Length Of Stay
Open	935	10	0	375
Minimally invasive	891	7	0	151
Grand Total	1,826	8	0	375

30 day mortality

Surgical Technique	Thirty Day Mortality (group)					
	No		y		Grand Total	
	Number of Records	% of Total Number of Records ..	Number of Records	% of Total Number of Records ..	Number of Records	% of Total Number of Records ..
Open	913	98.70%	12	1.30%	925	100.00%
Minimally invasive	876	99.32%	6	0.68%	882	100.00%
Grand Total	1,789	99.00%	18	1.00%	1,807	100.00%

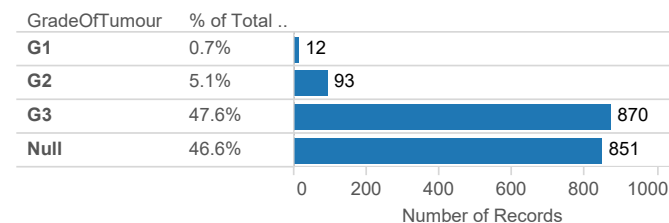
cumulative 90 day mortality

Surgical Technique	Ninety Day Mortality (group)					
	No		Yes		Grand Total	
	Number of Records	% of Total Number of Records ..	Number of Records	% of Total Number of Records ..	Number of Records	% of Total Number of Records ..
Open	913	97.65%	22	2.35%	935	100.00%
Minimally invasive	877	98.43%	14	1.57%	891	100.00%
Grand Total	1,790	98.03%	36	1.97%	1,826	100.00%

EnhancedRecovery

Surgical Technique	Enhanced Recovery Pathway						Grand Total	
	Yes		No		Null		Number of Records	% of Total Number of Records ..
	Number of Records	% of Total Number of Records ..	Number of Records	% of Total Number of Records ..	Number of Records	% of Total Number of Records ..		
Open	614	65.7%	127	13.6%	194	20.7%	935	100.0%
Minimally invasive	575	64.5%	64	7.2%	252	28.3%	891	100.0%
Grand Total	1,189	65.1%	191	10.5%	446	24.4%	1,826	100.0%

Grade of Tumour



Unplanned readmission

Surgical Technique	Unplanned Readmission To Hospital						Grand Total	
	Yes		No		Null		Number of Records	% of Total Number of Records ..
	Number of Records	% of Total Number of Records ..	Number of Records	% of Total Number of Records ..	Number of Records	% of Total Number of Records ..		
Open	88	9.4%	644	68.9%	203	21.7%	935	100.0%
Minimally invasive	77	8.6%	574	64.4%	240	26.9%	891	100.0%
Grand Total	165	9.0%	1,218	66.7%	443	24.3%	1,826	100.0%

Operative Histology

Operative Histology (group)	Number of Records	% of Total Number of Records ..
No cancer	201	11.0%
TCC	749	41.0%
TCC + Others	46	2.5%
Primary CIS	92	5.0%
Primary CIS+ other	4	0.2%
Squamous cell carcinoma	66	3.6%
Squamous cell carcinoma plus others	2	0.1%
Primary adenocarcinoma	17	0.9%
Gynaecological cancer	10	0.5%
Sarcoma+other	10	0.5%
Secondary adenocarcinoma + other	11	0.6%
Other	125	6.8%
Not recorded	493	27.0%
Grand Total	1,826	100.0%

Lymph nodes

Lymph Nodes Sampled	Positive Lymph Nodes															
	None		1 - 5		6-10		11-20		21-30		>30		Not recorded		Grand Total	
	Number of Recor..	% of Total Nu..	Number of Recor..	% of Total Nu..	Number of Recor..	% of Total Nu..	Number of Recor..	% of Total Nu..	Number of Recor..	% of Total Nu..	Number of Recor..	% of Total Nu..	Number of Recor..	% of Total Nu..	Number of Recor..	% of Total Nu..
1 - 5	88	80.0%	22	20.0%											110	100.0%
6-10	186	80.2%	43	18.5%	2	0.9%							1	0.4%	232	100.0%
11-20	507	83.1%	91	14.9%	9	1.5%	3	0.5%							610	100.0%
21-30	139	72.0%	46	23.8%	5	2.6%			1	0.5%			2	1.0%	193	100.0%
>30	48	65.8%	17	23.3%	4	5.5%			1	1.4%	3	4.1%			73	100.0%
Grand Total	968	79.5%	219	18.0%	20	1.6%	3	0.2%	2	0.2%	3	0.2%	3	0.2%	1,218	100.0%

LNDlevel2

Lymph Node Dissection	Number of Records	% of Total Number of Recor..
Level I	140	11.5%
Level I,Level II	78	6.4%
Level I,Level II,Level III	10	0.8%
Level II	769	63.1%
Level II,Level III	2	0.2%
Level III	128	10.5%
Level I,Level III	2	0.2%
None	48	3.9%
Not recorded	41	3.4%
Grand Total	1,218	100.0%

Known Positive Surgical Margin Rate

Surgical Technique	Positive Margins					
	Yes		No		Grand Total	
	Number of Records	% of Total Number of Records ..	Number of Records	% of Total Number of Records ..	Number of Records	% of Total Number of Records ..
Open	78	11.8%	584	88.2%	662	100.0%
Minimally invasive	57	11.3%	449	88.7%	506	100.0%
Grand Total	135	11.6%	1,033	88.4%	1,168	100.0%

Status at most recent Follow-up

Current Status	Patient Status	Time to Follow Up									
		0-90		91 - 180		181 - 360		> 360		Grand Total	
		Number ..	% of Tot..	Number ..	% of Tot..	Number ..	% of Tot..	Number ..	% of Tot..	Number ..	% of Tot..
Alive with local recurrence of bladd..	Alive	1	16.7%	2	33.3%	2	33.3%	1	16.7%	6	100.0%
Alive with lymph node involvement ..	Alive	2	22.2%	2	22.2%	4	44.4%	1	11.1%	9	100.0%
Alive with metastatic disease	Alive	1	5.9%	4	23.5%	8	47.1%	4	23.5%	17	100.0%
Alive with no evidence of bladder c..	Alive	129	43.9%	82	27.9%	60	20.4%	23	7.8%	294	100.0%
Discharged to GP / Other consultant	Alive	9	69.2%					4	30.8%	13	100.0%
Not recorded	Alive	25	41.0%	18	29.5%	16	26.2%	2	3.3%	61	100.0%
	Died in followup	13	22.8%	21	36.8%	21	36.8%	2	3.5%	57	100.0%
	Died in hospital (in another re..	1	100.0%							1	100.0%
Grand Total		181	39.5%	129	28.2%	111	24.2%	37	8.1%	458	100.0%

Participating Hospital Centres 2018

We are grateful to consultants from the following NHS Centres / trusts who returned data for these analyses:

Aberdeen Royal Infirmary
Addenbrooke's Hospital, Cambridge
Alexandra Hospital, Redditch
Arrowe Park Hospital, Wirral
Barking, Havering & Redbridge University Hospital
Bradford Royal Infirmary
Castle Hill Hospital, Hull
Charing Cross Hospital, London
Cheltenham General Hospital
Christie Hospital
Churchill Hospital, Oxford
Colchester General Hospital
Derriford Hospital, Plymouth
Eastbourne District General Hospital
Forth Valley Royal Hospital, Larbert
Freeman Hospital, Newcastle
Guy's & Thomas's Hospital
Heartlands Hospital, Birmingham
James Cook University Hospital, Middlesbrough
Kent & Canterbury Hospital
Leicester General Hospital

Lister Hospital, Stevenage
Maidstone Hospital
Manchester Royal Infirmary
Medway Maritime Hospital, Gillingham
Morrison Hospital, Swansea
New Cross Hospital, Wolverhampton
Ninewells Hospital, Dundee
Norfolk & Norwich University Hospital
Northwick Park Hospital
Pinderfields General Hospital, Wakefield
Queen Alexandra Hospital, Portsmouth
Queen Elizabeth Hospital, Birmingham
Queen Elizabeth University Hospital, Glasgow
Raigmore Hospital, Inverness
Royal Blackburn Hospital
Royal Alexandra Hospital, Paisley
Royal Berkshire Hospital, Reading
Royal Bournemouth General Hospital
Royal Derby Hospital
Royal Devon & Exeter Hospital
Royal Hallamshire Hospital, Sheffield

Royal Liverpool University Hospital
Royal Marsden Hospital, London
Royal Preston Hospital
Royal Shrewsbury Hospital
Royal Stoke University Hospital
Royal Surrey County Hospital, Guildford
Salford Royal Hospital
Southampton General Hospital
Southend Hospital
Southmead Hospital, Bristol
St George's Hospital, London
St James's University Hospital, Leeds
Stepping Hill Hospital, Stockport
Sunderland Royal Hospital
University College Hospital, London
Walsgrave Hospital, Coventry
Wycombe Hospital, High Wycombe
Wythenshawe Hospital, Manchester